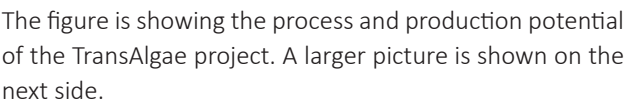


This three-year project will explore the possibilities of algae cultivation in a Nordic climate with the purpose of transforming algae to biofuels. The project partners are SLU (project leader), BioFuel Region, Mid Sweden University, Nattviken Invest, University of Vaasa, Novia and NIBIO.

The overall project goal is to successfully transfer innovative solutions for the production of micro- and macro-algae biomass as source of bioenergy and high value products from research directly to companies in a continuous dialogue.

1. Forming a network
2. Cultivation of algae
3. Harvesting of algae
4. Extraction of algae
5. Transformation of algae
6. System analysis



The project partners are the first building blocks of an algae network in the Botnia-Atlantica region. A goal is to extend the network during the project and also to involve more women working with algae.

Cultivation systems with focus on adaptation to Nordic climate will be developed. Both micro- and macroalgae will be used for cultivation in fresh, waste and sea water. The different systems will be evaluated in waste water efficiency, energy and economic sustainability and biomass production.

Existing harvesting methods such as centrifugation, filtration and chemical flocculation will be used for harvesting of algae. The macro algae contain a lot of minerals from the sea water, which may need to be removed before extraction.

Extraction of lipids from freshwater micro algae has been developed in lab scale at SLU which will be tested in larger scale. For macro algae, a first step extraction of high value molecules such as sulphated polysaccharides and proteins will be performed.

The biogas potential for each substrate and for co-digested samples will be carried out as well as pre-treatment. Hydrothermal liquefaction (HTL) experiments will be performed at lab scale. HTL has been shown to be a feasible technique to treat large amounts of biomass for production of a bio-oil that can be used further as a biofuel. The bio-oil is produced at a temperature of 250-370 °C and a pressure of 5-25 MPa with a residence time of 5-60 minutes.

Both a techno-economic and an energetic balance study will be performed during the entire season. The purpose is to have a sustainable algae cultivation system at a larger scale.



Production potential

PROJECT COURSE

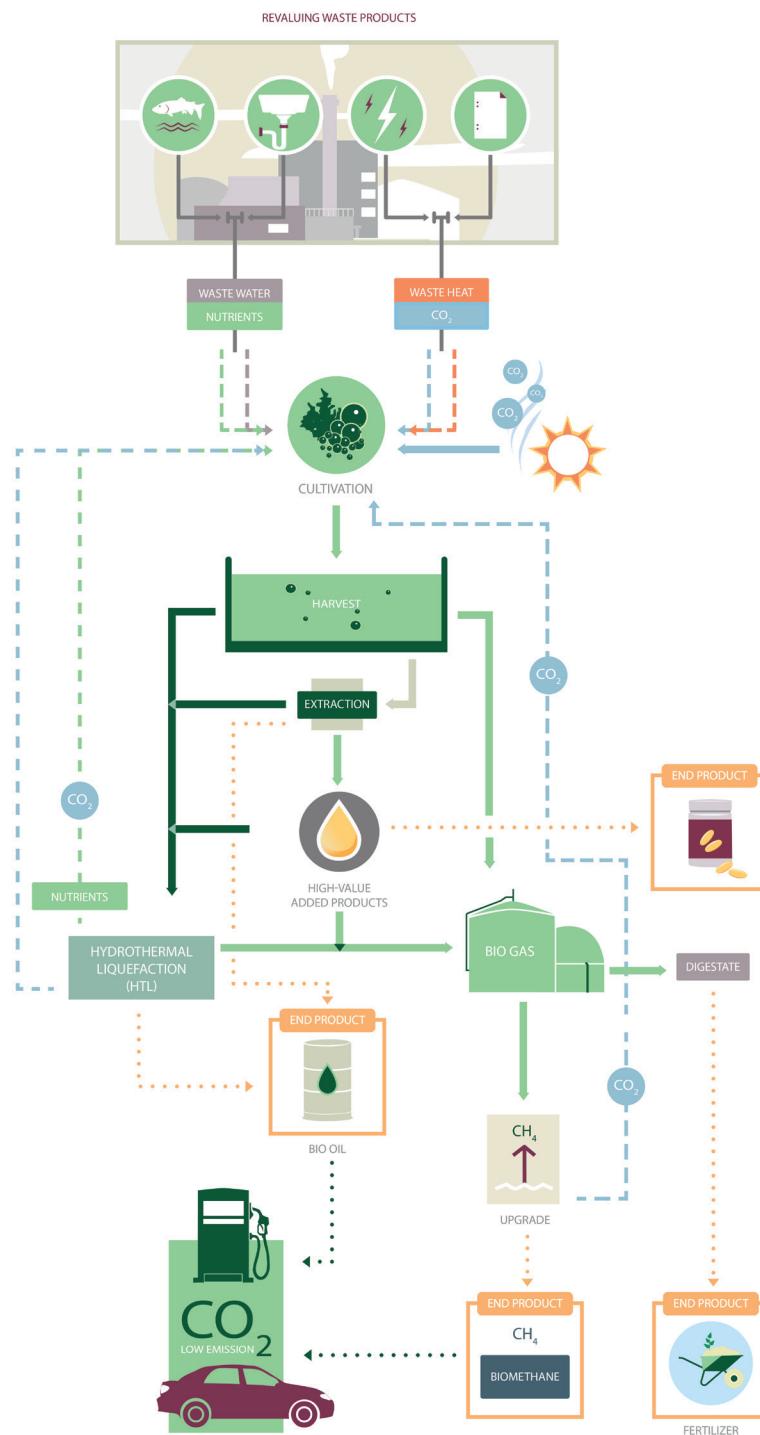
REVALUATION OF WASTE PRODUCTS

CULTIVATION

HARVEST

TRANSFORMATION

SYSTEM ANALYSIS



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